

CLAIMS

1. A system for immobilizing two or more vertebrae, which system comprises two or more screws (12, 14), an elongate connecting member (20, 20') and two or more fastening systems (16, 18) and is characterized in that each screw (12, 14) comprises a screw body (12a) and a screw head (12b) having the shape of a portion of a sphere consisting of a first spherical surface portion (24) between the screw body and a diametral plane orthogonal to the axis of the screw body and a second spherical surface portion (26); and
- each fastening system (16, 18) comprises at least:
- a clamping member (30); and
 - a fastening member (28) formed in one piece having the shape of a ring having a lateral wall (34) around an axial passage (36), said wall including a first aperture (38) adapted to receive and to cooperate with said clamping member and a second aperture (40) having a first portion (46) and a second portion (48), said two portions communicating with each other and being angularly offset relative to the axis (Y, Y') of the fastening member, said first portion having a diametral axis (Z, Z') substantially coinciding with that of said first aperture and a rim (50) forming a bearing surface for said first spherical surface portion (24) of the screw head, said second portion (48) of the second aperture (40) allowing the screw head to pass through it, said axial passage being adapted to receive at least one end of said connecting member (20, 20') and said screw head (12b), whereby the screw head may be freely introduced into the axial passage of the fastening member via said second portion of the second aperture by rotating said fastening member, the bearing surface (50) of the first portion of the second aperture is made to face the first spherical surface portion of the screw head and, by activation of the clamping member, the end of the connecting member and the screw head are immobilized against rotation and

against movement in translation relative to said fastening member.

2. An immobilization system according to claim 1,
5 characterized in that said fastening system (16, 18) further comprises an intermediate member (32, 32') adapted to be inserted into the axial passage (36) of the fastening member and having a first face (60) adapted to be made to face the internal face of the wall (34) of the
10 fastening member (28), a recess opening onto said first face, forming a bearing surface for at least a portion of said second spherical surface portion (26) of the screw head (12b), and a second bearing face (66) adapted to cooperate with the ends (20a) of the connecting member
15 (20, 20') whereby, when said intermediate member (32) is inserted into the axial passage (36) of the connecting member, the clamping force produced by the clamping member (30) is transmitted to said intermediate member via the end of the connecting member.

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3. An immobilization system according to claim 1, characterized in that each end (20a, 20b) of said connecting member (20) has a substantially plane first face (44) and a second face (52) including a longitudinal
25 recess (54) defining two inclined bearing surfaces (56, 58) adapted to cooperate with the second spherical surface portion (26) of the screw head (12b).

4. An immobilization system according to claim 2,
30 characterized in that said intermediate member (32, 32') has at each end a rib (68, 70) projecting from its first face (60) to cooperate with the end faces of said fastening member (28) when the intermediate member (32, 32') is engaged in the axial passage (36) of the
35 fastening member (28).

5. An immobilization system according to claim 2 or claim 4, characterized in that each end (20a, 20b) of the connecting member (20) has a substantially plane first face (44) for cooperating with the clamping member (30) and a second face (80) defining two substantially plane bearing surfaces (84, 86) for cooperating with the second face (66) of said intermediate member (32).
6. An immobilization system according to claim 2 or claim 4, characterized in that said connecting member (20') has a circular cross-section and in that said second face of the intermediate member (32') includes a bearing surface that has a cross-section in the shape of a circular arc adapted to receive an end of said connecting member (20').